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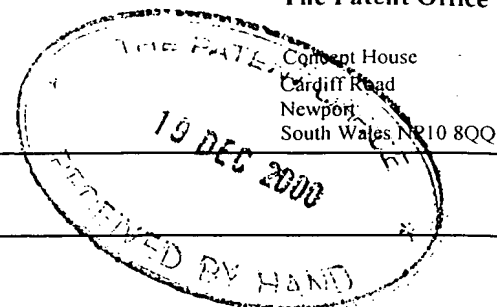
Patents A 977
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F01/7700 0.00-0030964.1

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	Patents ADP number (if you know it)			
	If the applicant is a corporate body, give the country/state of its incorporation	ENGLAND		
		08047334001		
4.	Title of the invention	A METHOD OF USING A COMPUTERISED TRADING SYSTEM TO PROCESS TRADES IN FINANCIAL INSTRUMENTS		
5.	Name of your agent (if you have one)	BOULT WADE TENNANT		
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Description 27

Claim(s) 5

Abstract -

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Priority documents -

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11 We request the grant of a patent on the basis of this application.

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19 December 2000

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A METHOD OF USING A COMPUTERISED TRADING
SYSTEM TO PROCESS TRADES IN FINANCIAL INSTRUMENTS

5 The present invention relates to a method of
using a computerised trading system to process trades
in financial instruments.

10 The present invention will be described in
particular with reference to a method of using a
computerised trading system for trading interest rate
SWAPS. SWAPS are a financial product whereby one party
pays a fixed interest against a counterparty that pays
a floating interest rate.

15 Traditionally, SWAPS have been traded through the
intervention of a human broker. The broker will
receive buying orders and selling orders and will
match buyers to sellers at a price agreed between the
buyer and the seller.

20 Recently, there has been a trend to trade of
financial instruments over the Internet. This poses
particular difficulties for the trading of SWAPS. The
present invention seeks to resolve those difficulties.

25 According to the present invention there is
provided a method of use of a computerised trading
system to process trades in financial instruments, the
computerised trading system comprising:

30 a trading system computer apparatus;
a plurality of client computer apparatus located
physically remote from each other and physically
remote from the trading system computer apparatus; and
a telecommunications network interlinking the
35 trading system computer apparatus and the plurality of

client computer apparatus;

wherein:

the method comprises the steps of:

- 5 (a) a first plurality of traders using the client computer apparatus to send to the trading system computer apparatus via the telecommunications network a plurality of offers for sale of financial instruments;
- 10 (b) a second plurality of traders using the client computer apparatus to send to the trading system computer apparatus via the telecommunications network a plurality of bids for purchase of financial instruments; and
- 15 (c) a trading administrator using the trading system computer apparatus to:
 - establish a succession of time limited order entry periods during which offers for sale and bids for purchase can be submitted to the trading system computer apparatus;
 - 20 to compare all offers for sale and bids for purchase made in a single order entry period at the end of the order entry period;
 - to match where possible the compared offers for sale and bids for purchase;
 - 25 to record for each trading period at least one benchmark trading rate; and
 - to make available electronically via the telecommunications network to all relevant traders information regarding the offers and/or bids which
 - 30 have been matched, such information for each matched pair of offer and bid being sent only to the traders who made the matched offer and bid and such information including the identity of the traders responsible for each matched pair of offer and bid and
 - 35 the benchmark trading rate set for the transaction.

A first embodiment of the present invention will

now be described with reference to the accompanying drawings in which:

5 Figure 1 is a schematic diagram illustrating a preferred embodiment of computerised trading system according to the present invention.

Figure 2 is a flow diagram showing the steps implemented by the trading system of Figure 1;

10 Figure 3 is a view of a first page shown on a screen of a computer in the trading system of Figure 1;

Figure 4 is a view of a second page shown on a screen of a computer in the trading system of Figure 1;

15 Figure 5 is a view of a third page shown on a screen of a computer in the trading system of Figure 1;

Figure 6 is a view of a fourth page shown on a screen of a computer in the trading system of Figure 1;

20 Figure 7 is a view of a fifth page shown on a screen of a computer in the trading system of Figure 1;

25 Figure 8 is a view of a sixth page shown on a screen of a computer in the trading system of Figure 1;

Figure 9 is a view of a seventh page shown on a screen of a computer in the trading system of Figure 1; and

30 Figure 10 is a view of an eighth page shown on a screen of a computer in the trading system of Figure 1.

35 In Figure 1 there can be seen a distributed computer network. The computer network comprises a trading system computer apparatus 10 which is

connected by a telecommunications network (e.g. the Internet) to a plurality of physically remote client computer apparatus 11, 12, 13, 14, 15 and 16. Data will be exchanged via the telecommunications network
5 between the server 10 and the client computer apparatus 11-16. Also shown in Figure 1 is a terminal (e.g. a personal computer) 17 connected to the computerised trading system computer apparatus 10, with the terminal 17 being used by a system
10 administrator of the system. The server 10 is also connected via the telecommunications network to information server 18, to receive financial information from the server 18. This will be described later.

15

The client computer apparatus 11-16 will typically comprise personal computers located at a plurality of different bank sites A,B,C,D,E,F. For convenience, only six sites are shown in Figure 1 but
20 it will be appreciated that any number of sites could be provided. Each personal computer 11-16 will have web browser software, for instance Microsoft Internet Explorer Version 5.0 (or higher) or Netscape Navigator Version 4.7 (or higher).

25

The web browser software on the client computer
apparatus 11-16 will be used to access a URL and via the URL exchange information with the computerised trading system computer apparatus 10. In a preferred
30 embodiment the telecommunication network used will be the Internet, with the URL being a website on the Internet and the client computer apparatus 11-16 using the web browser software to access the website on the Internet.

35

The system administrator will use the personal computer 17 to access a different URL which will allow access to maintenance functionality of the trading system computer apparatus 10.

5

A method of operation of the system will now be described. A trader at a financial institution A (e.g. a bank) will use a personal computer 11 and web browser Software on the personal computer 11 to access the trading site URL, which in turn is connected to the system server 10. Initially, the trader will be presented with a window as shown in Figure 3 and will be required to enter his/her user name and password. The combination of user name and password will be verified before access to the computerised trading system can be obtained. User names and passwords will be supplied to traders by the system administrator, who will also handle the allocation and maintenance of the user names and passwords. It is envisaged that this will be done outside the computerised system, with no provision for on-line registration. Each trader will be asked to change his/her password when he/she first logs on to the trading site URL.

25

Figure 2 shows an initial access by a trader to a home page at step 100 and then input of the user name and password at step 101.

30

Correct entry of a user name and password will take the trader to a trading window. This is illustrated in the figures which will be described below.

Incorrect entry of a user name will cause a

display message to appear informing the trader that the user name has been entered incorrectly. Incorrect entry of a password, when the user name has been entered correctly, will result in a display message
5 informing the trader that he/she has entered an incorrect password and there will be a limited number of attempts left for the entry of a correct password. A number of attempts will be definable by the system administrator via the maintenance page available on a
10 different URL to a system administrator. When the total number of permissible attempts has been reached then a trader will be informed that he/she has been locked out of the system and he/she will need to contact the system administrator before access will be
15 granted again, even if the correct user name and password are entered.

The correct entry of a user name and password combination will allow the trader to access a trading
20 window, this being shown by step 102 in figure 2. An example of a trading window is given in Figure 4. The trading window has three tabbed pages, an "Order Book" page (figure 4), a "Current Market" page (figure 7) and a "Trades" page (figure 9). On initial entry to
25 the system the trader is presented with the "Order Book" page shown in Figure 4. The page will have a number of "buttons" which can be "clicked" on. The page will also be linked to a "Trader Profile" page and a "Benchmark" page (discussed later). The
30 following buttons are visible on the page:
"New Order" button 20,
"Amend Order" button 21,
"Cancel Order" button 22,
"All Out" button 23,
35 "Refer/Renew" button 24 and

"Agree" button 25.

The "Agree" button 25 may only be available at certain times in the operation of a system, which will be described later.

5

The "Order Book" page of the trading window allows each trader to view and amend his/her orders. A currency selection can be made by a drop-down box 26. In the illustrated embodiment, trading in Euros is shown. It is envisaged that the computerised trading system will allow trading in a plurality of different currencies, e.g. Euro, Sterling, US Dollars, Japanese Yen, Swiss Francs.

15 The trader will be able using the "Order Book" page to click on a particular order to highlight the order. Only one order can be highlighted at any one time.

20 For each order the following information will be shown:

Maturity - e.g. between one year, two years, three years, four years etc

25 Payer/Receiver-to indicate whether the client is a payer (i.e. the trader has entered a bid for the purchase of SWAPS) or a receiver (i.e. the trader has entered an offer for sale of SWAPS)

Amount - the amount of the bid or offer

30 AON - this will be highlighted to indicate if the trader has indicated that the trader will only deal for the total amount and will not split the offer or bid into smaller amounts

35 Minimum Fill - this shows the minimum fill amount

5 specified by a trader, the minimum fill
amount being the minimum value offer or
bid that the trader will consider as
part of a package of offers or bids to
complete the whole order

Queue Number - the position of the order in the order
queue (allocated by the computerised
trading system)

10 Status - - this indicates whether the order is
active, referred or rollover.

The trader can click on the New Order button 20 to be
presented with an "Order Input Box" as shown in Figure
5. The Order Input Box has a "Proceed" button 27, a
15 "Cancel" button 28 and six data entry fields. The
fields are as follows:

Currency- the trader will select at field 29 between
the various available currencies, trading in
Euros being shown in the Figure.

20 Maturity- the trader will select at field 30 between
the available maturities, e.g. one year, two
years, three years etc (5 years is shown)

Payer/

25 Receiver- the trader will select whether they are
a payer or a receiver ('payer' selection is
shown)-

Amount - the trader will enter an amount at field 32.
The amount has to be above a minimum size
and has to be in predetermined values,
30 depending upon the currency selected. It is
assumed that for Sterling the minimum size
will be £5,000,000 and the predetermined
values will be e.g. £10, £25, £50, £75,
£100, £250 or £500 million (larger values
35 available in multiples of 100 million). The

system administrator will be able to amend the minimum size and predetermined value for each currency via the Maintenance page

5 AON - at field 33 the trader will be able to select YES or NO relating to whether or not they would like to specify the order as "ALL OR NOTHING" (AON). A deal that is AON will be matched only when the full amount can be

10 met by other orders. When the trader selects NO then an amount less than the fill order amount can be filled.

Minimum

Fill - the trader will be optionally able to select a minimum fill amount at field 34. The

15 minimum fill amount is the minimum a trader is prepared to trade with any one financial institution (e.g. banks) in a single order. This amount must be above the currency's minimum amount or must be one of the

20 currency's predetermined values and must be below the amount specified in the amount field.

It is envisaged that the system administrator could program into the computerised trading system 10

25 ~~for each trader at the request of the trader default~~ amounts in each of the six boxes equal to those in the immediately previous trade. This will ease completion of the New Order Page.

30

Once a trader clicks the "Proceed" button 27 then the New Order Page is closed and a "Credit Limit" page is automatically opened. The Credit Limit page is shown in figure 6 and will now be described.

35

Financial institutions normally set credit limits for the other financial institutions with whom they trade. These financial limits limit the maximum amount of exposure a trader can have with each possible
5 counterpart. This is to limit the maximum amount of risk one financial institution can have with another, in case one financial institution defaults.

The "Credit Limit" page will allow each trader to
10 select with which other financial institutions they will trade for each bid or offer. The "Credit Limit" page shows at the top details of the relevant order these being the currency, the amount, the maturity period and whether the trader is acting as payer or
15 receiver. The page will also list the names of all financial institutions who have signed up to use the computerised trading system. A Tick box 35 is displayed next to the name of each financial institution. When a trader ticks a box next to a name of a financial institution, this will indicate that
20 the trader is agreeing that his financial institution will trade with the specified financial institution for the current order up to the total amount of the order in the relevant maturity period. If a trader has
25 already approved a longer maturity for the counterparty then the page will default to a tick which is colour coded to show that it is an automatic default. If a trader has previously approved limits for shorter maturities there will be a question mark
30 indicated. If this is not amended by the trader then this will indicate that a limit does not exist for the particular maturity in question.

To complete a new order the "Credit Limit" page
35 is closed by clicking a Proceed button. The new order

is automatically reflected in the "Order Book" page (figure 4) and in a "Current Market" page (figure 7). The completion of the "Credit Limit" page is shown as step 104 in figure 2. At this time the computerised trading system gives the new order a queue number indicating the priority of the order in the list of orders received by the computerised trading system. The queue numbers are issued sequentially for each maturity, so that the first order in a trading period for a financial instrument with a particular maturity is given the highest priority. The trader is returned to the "Order Book" page (figure 4) after completion of the "Credit Limit" page. This is shown as step 105 in figure 2.

15

The "Amend Order" button 21 present on the Trading page (see Figure 4) can be used to amend existing orders. When the "Amend Order" button is clicked then an "Order Input" page (figure 5) will be shown populated with details of an order which has been previously highlighted in the "Order Book" page (figure 4). If the button 21 is clicked when no order is highlighted, a message box will appear asking the trader to select an order. Once an order has been selected then the "Order Input" page (figure 5) for that order will appear with the prerecorded details. The trader will then be able to change any of the fields within the "Order Input" page (figure 5).

30

The "Order Book" page (Figure 4) also has a "Cancel Order" button 22. When the "Cancel Order" button 22 is clicked then (following confirmation from the trader) the order highlighted on the "Order Book" page is removed from the computerised trading system. This will cause the computerised trading system 10 to

35

automatically update the numbers of orders and this will be shown in the "Order Book" page (figure 4) and the "Current Market" page (figure 7).

5 If the "Cancel Order" button 22 is selected when there is no order highlighted previously, then a message box will appear to ask the trader to select an order. Once an order has been selected then the same process will take place.

10

 There is also provided on the trading page the "All Out" button 23. When this button is clicked then (following confirmation from a trader) all of the orders for the trader for all maturities and all
15 currencies will be removed from the computerised trading system. This will be automatically reflected in the "Order Book" page (figure 4) and the "Current Market" page (figure 7). The queue numbers of any other orders for the same maturity and currency will
20 automatically be updated on the displays accessed by all traders.

 Further available on the trading page is the "Refer/Renew" button 24. When this button is clicked
25 and an active order is highlighted in the "Order Book" page, then (following confirmation from the trader) the highlighted order will be referred within the computerised trading system 10. When an order is referred, it is not longer an active order and
30 therefore it will not be matched. A referred order is given the queue number "N/A". This will cause the "Current Market" page (figure 7) to be automatically updated with a new number of orders. It will also automatically update the "Order Book" page. Referring
35 an order has the same effect as removing the order,

with regard to trading and matching, but the order details remain in the system so that the trader can re-input the order without having to re-input all of the data.

5

When the "Refer/Renew" button 24 is clicked on the trading screen in respect of a previously referred order highlighted in the "Order Book Section", then (following confirmation from the trader) the
10 previously referred order will be made active again within the system. When the order is made active it will be available for matching. When the referred order is made active it will be given a new queue number. The "current market" page of the trading
15 window will automatically be updated with a new number of orders. This will be available to all traders. The queue numbers for any other orders in the same maturity and currency will be updated. Making a referred order active has the same effect as creating
20 a new order with regard to trading and matching but the trader does not have to input order details.

If the "Refer/Renew" button 24 is clicked whilst there is no order highlighted, then a message box will
25 appear asking the trader to select an order. Once an order has been selected then the process described above will take place.

Every trader will be able to access the "Current
30 Market" page of the trading window shown in Figure 7. This is an area which solely displays information. It shows for a particular trading period the current number of orders which have been placed in the computerised trading system with reference to each
35 currency and each maturity period. In the figure only

one currency (Euro) is shown for simplicity but there will be shown on the pages order information by maturity period for each currency traded. An order is either a bid or an offer for sale of a SWAP. The
5 computerised trading system 10 will use stored information to select and highlight in a different colour those order numbers where the trader already has an active order logged in the system.

10 The computerised system 10 will update the "Current Market" page whenever a new order is entered. The step of viewing the "Current Market" page is shown at step 106 in figure 2.

15 From the Trading Window the trader can also access a trader profile page by clicking a button 36. This page will allow traders to view their own profile, including their contact details. These are the details stored for each trader in the computerised
20 trading system. An example is shown in figure 8. The step of viewing the trader profile page is shown at 107 in figure 3.

The computerised trading system works such that
25 each day at 11.00 a.m. (or at another specified time) there is a cut-off in acceptance of orders and an order entry period is closed. After the end of the order entry period, the traders will not be able to amend active or referred orders, or add orders to the
30 system in respect of the closed order entry period.

Immediately after the end of the order entry period all active orders are logged in the database of the computerised trading system 10 and then matched
35 (where possible) against each other and trades are

conditionally generated, subject to the ISDA fix being published (see below). Initially traders are given indicative notices of matched bids and offers and when the price has been fixed then the deals will be notified to the traders responsible for each matched pair of offer and bid automatically by the computerised trading system. This will be described further below.

10 An algorithm is used to match the trades. The algorithm operates in the following manner for each currency and maturity year combination:

15 (a) Each order is processed by time priority (i.e. its queue number). The first order submitted to the computerised trading system in the relevant order entry period in each maturity period is tackled first.

20 (b) A first search is carried out for an exact match of the amount and conditions established by the order, the order being matched successively with other orders with reference to their queue numbers. For instance, if the first order is for Euro 100,000,000 and specifies that a minimum fill amount is Euro 25,000,000 then the first search will determine whether there is a corresponding bid for Euro 100,000,000 with a minimum fill amount of Euro 25,000,000.

30 (c) If there is no identical match, then the computerised trading system will look for an exact amount match, again searching successively through the orders with reference to their queue numbers. For instance, when the first order is an order to sell £100,000,000 Sterling with a minimum fill size of £25,000,000 Sterling then

the computerised trading system will at this stage match the order with a bid to purchase Euro 100,000,000 -worth (with no minimum fill size specified).

- 5 (d) If the computerised trading system cannot match amounts then the algorithm will match the order sequentially with other orders having regard to the queue numbers of other orders and also having regard to any minimum fill amounts specified. For
10 example, the first order for sale of Euro 100,000,000 with a minimum fill amount of Euro 25,000,000 will be matched e.g. with an order with a next highest queue number for purchase of Euro 75,000,000.
- 15 (e) The remaining balance left after the initial matching will become the new first order and this is matched according to the steps mentioned above.
- 20 (f) Once the system has tried to match the balance and has either succeeded or failed then the computerised trading system will tackle the next order having regard to the priority of the order indicated by the queue number of the order. In
25 other words the second order submitted in the time period for the relevant maturity period will be processed by the matching system.

When a computerised trading system is able to match an order then a bilateral check will be
30 performed on the credit limit specified by the two financial institutions involved. If the bilateral credit limits specified by the two financial institutions for each other enable the order to be completed then a match will be noted. If a credit
35 limit is not specified for the order by one of the

pair of financial institutions in respect of the other then the system will not match the orders.

5 Once all possible orders are matched then the computerised trading system removes the matched orders from the "Order Book" pages (figure 4) viewed by the traders. Also the computerised trading system sends indicative trade e-mails to each relevant trader informing them for each matched order of:

10 1. the currency of the matched order
 2. the maturity of the matched order
 3 whether the trader placed the order as payer or receiver
 4. the amount of the order

15 5 a reference to an ISDA fixing (see later).

 All matched orders for each trader are published on a "Trading" page individual to that trader. An example is shown as Figure 9. Each trader can view for

20 each matched order the currency of the order, the maturity period, whether the trader was a payer or receiver for the order, the financial amount and the name of the financial institution with which the trade was made. Initially the right-hand column "Rate" will

25 be empty or filled with zeros.

 At this time the computerised trading system server obtains from an independent source a SWAP benchmark rate. This is shown in Figure 1 by a link of

30 the computerised trading system server 10 to the server 18. It is envisaged that the server 18 will be an independent server, e.g. a server of the Reuters financial information group. The server will publish daily a benchmark rate for SWAPS as determined by the

35 International SWAPS and Derivatives Association

(ISDA). The SWAP benchmark rate calculated by ISDA is defined as "the rate provided by the dealer should be the mean of what the dealer would itself offer and bid a SWAP in the relevant maturity for a notional
5 equivalent of US\$50,000,000 or whatever amount is the market size in that currency for a tenor to an acknowledged dealer of good credit in the SWAPS market". The rate is assessed by the ISDA conducting soundings with financial institutions in the market.
10 Currently in respect of United States dollars, the Japanese yen, UK sterling and Euros, the computation takes all the fee rates that have been submitted and eliminates the four highest and the four lowest rates and determines the straight average of the remaining
15 rates, provided that at least 12 rates have been submitted. For Swiss francs the computation takes all the rates that have been submitted, eliminates the two highest and the two lowest rates and determines the straight average of the remaining rates provided that
20 at least six rates have been submitted.

The ISDA also sets standard contract terms for all interest rate SWAPS. The terms are the contract terms which govern all transactions between financial
25 institutions. This allows the computerised trading system of the present invention to act in an unusual manner. Known electronic computerised trading systems usually result with two contracts resulting for each transaction. A first contract is made between the
30 party offering the financial instrument for sale and an intermediary (the intermediary running the electronic trading service) and a second contract is made between the intermediary and the person buying the financial instrument. In most cases, the offeror
35 and the bidder do not ever know the identity of each

other. With the trading of SWAPS, because all parties will know the contract terms in advance (these being the standard ISDA contract terms) and because the computerised trading system of the present invention
5 allows each trader to set limits on its trading with other financial institutions, the resulting contracts can be contracts directly between the financial institutions, with the administrator of the computerised trading system simply acting as a
10 facilitator to match one party with another. Furthermore, it should be understood that the match will take place not only on the standard contract terms set by the ISDA but also the match will take place at the daily benchmark rate published by the
15 ISDA with the relevant time period.

The ISDA rate will not be published typically until up to 30 minutes after the end of the order entry period. In that period the traders will know
20 what orders have been matched, but will not know the relevant ISDA rate until it is published. Once the ISDA benchmark rates are fixed then the traders will be notified of completed deals, as can be seen in Figure 9. E-mails will be sent out to all traders
25 when the fixing has occurred comprising all the information in the initial indicative e-mails, plus the fixed rate.

A page showing the ISDA fixing rates is available
30 to all traders and can be seen in Figure 10. It is accessed by clicking the button 40.

Any unmatched orders remain displayed on the "Order Book" page of the Trading page with the option
35 of being resubmitted for the next day's trading. They

will be marked with the status "Rollover". If there is more than one order from the same trader for the same period and for the same direction (i.e. payer or receiver) then the orders are aggregated, unless the
5 orders happen to be from different traders at the same financial institution, in which case they would remain divided.

10 All-orders that are unmatched and the remainders of any partially matched orders are displayed in the Order Book section of the Trading page. The Order Book fields are populated in the following way:

Currency	-	the currency of the unmatched order
Maturity	-	the maturity of the unmatched order
15 P/R	-	whether the unmatched order was as a payer or a receiver
Amount	-	the unmatched amount
AON	-	this indicates whether the unmatched order was for "all or nothing"
20 Minimum fill	-	this indicates whether the order had a minimum fill amount
Queue number	-	this is a blank field
Status	-	rollover.

25 At this time, all of the trading buttons described above will be "greyed out" except for the "Agree" button, the "All Out" button and the "Cancel Order" button.

30 When the "Cancel Order" button is clicked in respect of a previously highlighted order then (following confirmation from the trader) the computerised trading system will remove the highlighted order where its status is noted as
35 "Rollover". If the button is clicked and no "Rollover"

order has been previously highlighted then a message box will appear asking the trader to select a "Rollover" order.

5 When the "Agree" button is pressed, then all of the orders with a status of "Rollover" will have their status automatically changed to "Active" and will receive queue numbers. These orders will remain in the computerised trading system for the next trading
10 period. They will receive queue numbers at the time that the "Agree" button is clicked. When the "All Out" button is clicked then (following confirmation from the trader) all "Rollover" orders are deleted.

15 To summarise the above description, there will be daily order entry periods ending at 11.00 a.m. (Or such other time) each day. In each order entry period traders can enter into the computerised trading system orders comprising offers for sale and bids for
20 purchase. These orders will be given a queue number based upon how early in the order entry period the orders are entered. At the end of the order entry period, a matching algorithm described above will try to match up all of the orders. At the end of this
25 process the details of the matched and unmatched orders are made available to all of the traders. Where orders have been matched e-mails will be sent to the traders involved confirming the matching. This
30 matching will involve the forming of a contract between two financial institutions, the terms and conditions of which are governed by the standard ISDA agreement. Initially, e-mails will be sent informing the traders of matched orders, but without relevant rates. Once ISDA rates are fixed then e-mails will be
35 sent confirming fixed rates. Each trader has an

individual website page showing him/her the orders placed in an order entry period and also a website page showing him/her trades made following the end of the order entry period. Every trader has access to a website page showing the total numbers of orders placed for each currency in each order entry period.

Once the matches have been made and the ISDA rates published, then the computerised trading system will provide information to a "Back Office" system for settlement of the matched trades. Either printed information can be output for use in an existing "Back Office" system or there will be an electronic link.

Turning now to the role of the system administrator, it has been mentioned above that the system administrator will be able to use a personal computer 17 to access a URL different to the URL of the computerised trading system. The access will be made through a user name and a password page. The system administrator will be able to access a maintenance page, a system administrator benchmark page and a system administrator trading page. The maintenance page will have two sections, a client maintenance section and a general maintenance section. The client maintenance section will be used by the system administrator to add, amend and delete traders registered within the computerised trading system. The general maintenance section will be used to maintain general system parameters such as the minimum amount size for each currency. The maintenance page will be accessible only by the system administrator.

The client maintenance section will list the registered traders on the system and will also have an

ADD button, an AMEND button and a DELETE button. By clicking on a listed trader the trader will be highlighted. Subsequent clicking on the AMEND button will bring up a trader's details box populated with the trader's details. If no trader is highlighted at the time that the AMEND button is clicked then a message box will appear asking the system administrator to select a trader. Once the selection is completed then the relevant trader's details box will appear.

The trader's details box itself will contain a CANCEL button, a SAVE button and the following fields:

Bank name	
User name	
Password	
Keyword	- This will be an additional identifier for emergency purposes. If a trader has computer equipment which fails them he/she can telephone the system administrator to cancel all of his/her orders using his/her user name, password and keyword to provide identification
E-mail address	
Default currency-	this being the currency default for the trading page accessed by the dealer
Default maturity-	this being a maturity value default for the relevant field in the trading page accessed by the trader
Default P/R	- this will indicate whether P/R box in the trading page accessed by

the trader should be defaulted to
P or R
Default AON - the default for this field will be
set at NO unless there are some
5 unusual instructions received
Default minimum
Fill - this will default to no minimum
fill unless there are some unusual
- instructions received

10

Any of the above details can be amended by the
system administrator and then a SAVE button can be
executed to save the amended details.

15

Clicking on an ADD button will allow the system
administrator to open up a new trader's details box
with all of the details mentioned above. The system
administrator can populate the fields and add a new
trader to the system.

20

When the system administrator clicks on the
DELETE button and a registered trader has been
previously highlighted then a message box will appear
asking for confirmation. If confirmation is given then
25 the registered trader will be deleted from the system
along with all orders belonging to that trader.

25

Deletion cannot occur between the publishing of the
ISDA benchmark rate and the publishing of the results
of the matching process.

30

If the DELETE button is clicked when no
registered trader has been previously highlighted then
a message box will appear asking the system
administrator to select a registered trader. Once a
35 trader has been selected then a message box will

appear asking for confirmation. If confirmation is given then the registered trader will be deleted as described above.

5 The system administrator will have available a system administrator trading window which will replicate the trading window shown to the traders but will show all orders for all traders. The system administrator will be able to add, delete, cancel and
10 refer/renew any orders in the system. The system administrator will also have access to the trader's profile page for all the traders.

 Within the maintenance page the administrator
15 will be able to print off details of all trades that have taken place in any trading period.

 The computerised trading system will keep a message log file in which all actions by traders will
20 be stored.

 It should be appreciated from the above that in any order entry period the traders have anonymity, so that no individual trader knows the identity of the
25 other traders who have placed orders in the trading system although the numbers of orders placed for each currency and maturity will be known publicly and there will be an indication to each trader of the orders placed by that trader (by the highlighting of a
30 relevant combination of currency and maturity). Furthermore, details regarding the size of the orders placed in terms of financial amounts will not be known to any of the traders during any order entry period. The information only becomes available at the end of
35 the matching process and even then the traders will

know only the details of their own matched trades and their own unmatched orders.

5 It is envisaged that the matching process and trade confirmation will take up to 30 minutes between 11.00 a.m. and 11.30 a.m. (or between other specified times) each day, as it takes up to that long for ISDA to publish benchmark rates. No order entry will occur in this period.

10

Whilst the system has been designed with the trading of interest rate SWAPS in mind, it should be appreciated that the system may also be suitable for other financial instruments and the invention should not be considered as limited to interest rate SWAPS.

15

It is envisaged that a modification to the system would allow each trader to establish for each other trader total credit limits in each maturity period. The computerised trading system would then automatically reduce the remaining credit available for trading when orders are placed so that each trader does not risk overexposure to a single institution. The computerised trading system would stop placing of orders including that of a financial institution when the remaining credit for the institution is not sufficient.

20

25

It is also envisaged that each trader could set limits to the rates at which trades will be made, i.e. a trader could specify that an order is dependent on the ISDA fixing rate being more favourable than a predefined limit.

30

35 The computerised trading system uses a method of

matching which seeks to minimise the number of parties involved in any matching of a bid or offer. Whilst it is not significant e.g. in a computerised trading system for trading equities for an order for purchase
5 of equities to be filled by the least number of vendors possible, this is important for SWAPS because of the costs of processing agreements between parties.

10 If at the end of any order entry period the ISDA does not publish benchmark rates then the system administrator can make its own investigations and set rates by itself. At present ISDA contacts 16 financial institutions to obtain 12 rates. If ISDA does not
15 receive 12 replies then the system administrator can discover which institutions have not replied and can contact them directly to obtain the necessary information and then combine this with information previously ascertained by ISDA to calculate rates according to the formula used by ISDA. If information
20 is collected from less than 12 institutions then the system administrator can for each rate take a straight average of rates from the information it receives.

CLAIMS

1. A method of use of a computerised trading system to process trades in financial instruments, the
5 computerised trading system comprising:
a trading system computer apparatus;
a plurality of client computer apparatus located physically remote from each other and physically remote from the trading system computer apparatus; and
10 a telecommunications network interlinking the trading system computer apparatus and the plurality of client computer apparatus;
wherein:
the method comprises the steps of:
15 (a) a first plurality of traders using the client computer apparatus to send to the trading system computer apparatus via the telecommunications network a plurality of offers for sale of financial instruments;
20 (b) a second plurality of traders using the client computer apparatus to send to the trading system computer apparatus via the telecommunications network a plurality of bids for purchase of financial instruments; and
25 (c) a trading administrator using the trading system computer apparatus to:
establish a succession of time limited order entry periods during which offers for sale and bids for purchase can be submitted to the trading system
30 computer apparatus;
compare all offers for sale and bids for purchase made in a single order entry period at the end of the order entry period;
to match where possible the compared offers for
35 sale and bids for purchase;

to record for each order entry period at least one benchmark trading rate; and

to make available electronically via the telecommunications network to all relevant traders
5 information regarding the offers and/or bids which have been matched, such information for each matched pair of offer and bid being sent only to the traders who made the matched offer and bid and such
10 information including the identity of the traders responsible for each matched pair of offer and bid and the benchmark trading rate set for the transaction.

2. A method as claimed in claim 1 wherein each offer and each bid specifies a financial value and the
15 trading system computer apparatus when matching offers and bids initially attempts for each offer to find a bid which is of exactly the same financial value and initially attempts for each bid to find an offer which is of exactly the same financial value.

20

3. A method as claimed in claim 1 and claim 2 wherein:

the trading system computer apparatus allocates to each offer and each bid a queue number allocating a
25 priority to the offer or bid dependent on how soon after the start of an order entry period the offer or bid is made; and

the trading system computer apparatus at the end of each order entry period compares bids and offers
30 made in the order entry period by starting with the bid or offer with the earliest queue number and then comparing the bid or offer with later made bids or offers successively having reference to the queue numbers of the later made bids or offers and starting
35 with the earliest later made bid or offer.

4. A method as claimed in any one of claims 1 to 3,

wherein:

each offer for sale contains information regarding a financial value of each financial instrument and a maturity date of each financial instrument;

each bid for purchase contains information regarding a financial value of each financial instrument requested and a maturity date of each financial instrument; and

the computerised trading system matches bids and offers by matching the financial values and maturity dates of the bids and offers.

5. A method as claimed in claim 4 wherein:

each offer for sale contains information specifying whether the offer must be accepted in full or whether the offer can be accepted in part;

the computerised trading system checks initially whether each offer for sale can be matched in full with a bid for purchase and when an offer for sale which can be accepted in part cannot be matched in full then the computerised trading system will match the offer for sale with a bid for purchase of a lesser financial value and will calculate a remainder value; and

the computerised trading system attempts to match the remainder value of each offer for sale with remaining bids for purchase.

6. A method as claimed in claim 4 or claim 5 wherein:

each bid for purchase contains information specifying whether the bid must be accepted in full or whether the bid can be accepted in part;

the computerised trading system checks initially whether each bid for purchase can be matched in full with an offer for sale and when a bid for purchase which can be accepted in part cannot be matched in full then the computerised trading system will match the bid for purchase with an offer for sale of a lesser financial value and will calculate a remainder value; and

the computerised trading system attempts to match the remainder value of each bid for purchase with remaining offers for sale.

7. A method as claimed in any one of the preceding claims wherein each trader when making an offer or a bid specifies which other traders can be considered for a matching bid or offer and the trading computer apparatus considers the identities of the traders responsible for each potential pair of matched bid and offer and will match the pair of bid and offer only if each relevant trader has been specified as an acceptable trader by the other.

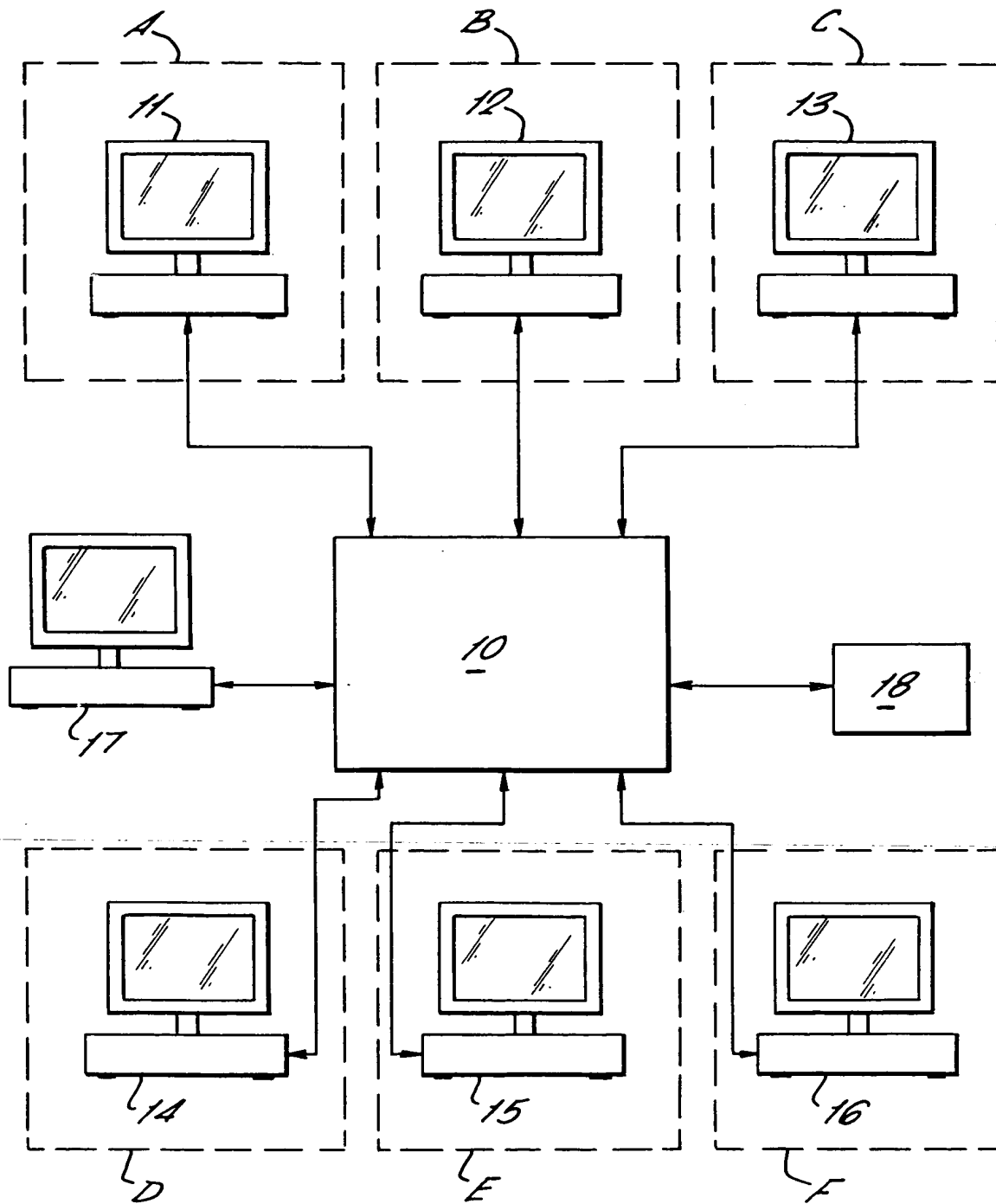
8. A method as claimed in any one of the preceding claims wherein the financial instruments traded each have a maturity date and the trading system computer apparatus makes accessible to all the traders via the telecommunications network a record of how many bids and offers have been made in total by all traders for financial instruments in a plurality of maturity periods.

9. Use of a personal computer as client computer apparatus in a computerised trading system operated to process trades in financial instruments according to a method as claimed in any one of the preceding claims.

10. Use of one or more computer servers as a trading
computer apparatus in a computerised trading system
operated to process trades in financial instruments
according to a method as claimed in any one of claims
5 1 to 9.

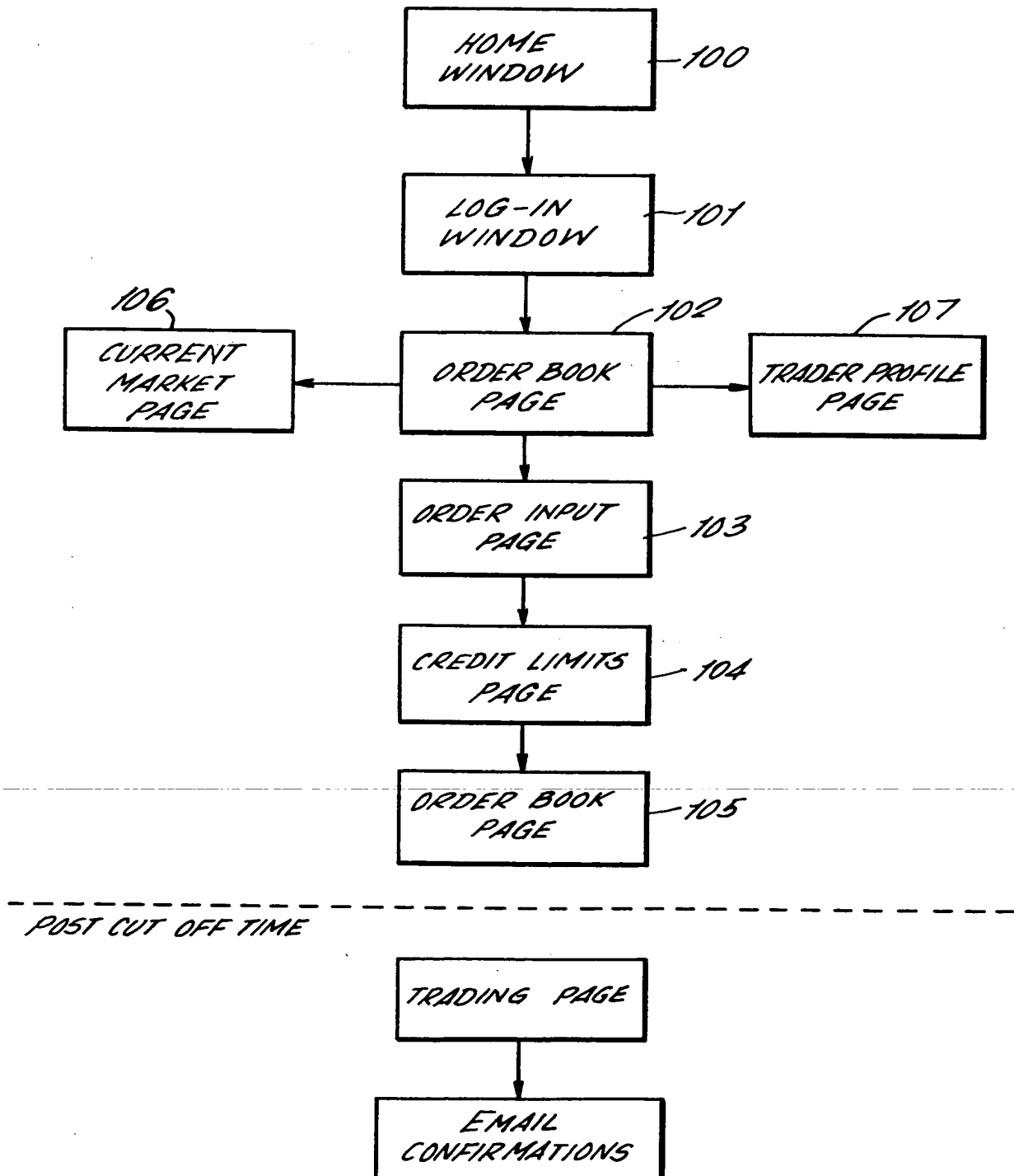
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FIG. 1



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FIG. 2.



Home window

FIG. 3.

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InterCapital
etc.

10:54am GMT, 10:55am Local Time

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November 22, 2000

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benchmark fixing rate for Medium Term vanilla Interest Rate Swaps

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password *****

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submit

FIG. 4.

Trading window - Order Book tab

Garban InterCapital

11:02am GMT 11:03am Local Time

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Trades

Current Market

Order Book

Select Currency Euro

Maturity (Y)	Payer/Receiver	Amount (m)	ADN	Minimum Fill	Queue Position	Status
1	Receiver	50	-	10	1	Active
1	Payer	75	-	10	N/A	Referred
3	Receiver	250	✓	-	1	Active
5	Receiver	25	-	10	2	Active
5	Receiver	50	-	25	N/A	Referred
8	Payer	100	-	10	1	Active
10	Payer	50	-	10	N/A	Rollover

new order

amend order

cancel order

all out

refer/renew

agree

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26

34

25

24

23

22

21

20

FIG. 5.

29 New Order window

Garban InterCapital
November 27, 2000

10:14am GMT, 10:14am Local Time
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Order Input

Currency: Euro

Payer/Receiver: ☒ Payer ☐ Receiver

ADN: ☐ No ☐ Yes

Naturity: 5 (select from list)

Amount: 250 (select from list)

Minimum Fill: 10 (select from list)

cancel proceed

5/10

32

28

27

30

33

31

34

Trading partners window – Current Trade tab

FIG. 6.

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Order Details

EURO 5yr Payer 250m

Current Trade


Institutions

<input checked="" type="checkbox"/>	<input type="radio"/>	ABBAY NATIONAL FP (LDN)
<input checked="" type="checkbox"/>	<input type="radio"/>	ABN AMRO (LDN)
<input checked="" type="checkbox"/>	<input type="radio"/>	ABN AMRO (NRK)
<input checked="" type="checkbox"/>	<input type="radio"/>	BALABA (LDN)
<input checked="" type="checkbox"/>	<input type="radio"/>	BANKGESELLSCHAFT (BERL)
<input checked="" type="checkbox"/>	<input type="radio"/>	BARCLAYS (LDN)
<input checked="" type="checkbox"/>	<input type="radio"/>	BDL (BXL)
<input checked="" type="checkbox"/>	<input type="radio"/>	BEAR STEARNS (DUB)
<input checked="" type="checkbox"/>	<input type="radio"/>	BNP PARIBAS (PAR)
<input checked="" type="checkbox"/>	<input type="radio"/>	BDA (CHH)
<input checked="" type="checkbox"/>	<input type="radio"/>	BRED (PAR)
<input checked="" type="checkbox"/>	<input type="radio"/>	CAL (PAR)

35

Trading window – Current Market tab

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etc

Garban InterCapital


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03:57 PM

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Euro	Maturity										Trades	Current Market	Order Book
	1yr	2yr	3yr	4yr	5yr	6yr	7yr	8yr	9yr	10yr			
No. of Orders	1	7	3	43	2	2	0	1	0	0			



Garban InterCapital

Trader Profile window

FIG. 8.



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11:11am GMT, 11:12am Local Time

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Trader Profile

Name	KIERON NOLAN
User ID	knolan
Bank Trading Name	WXYZ LDN
Location	LONDON
Email	k.nolan@g-icap.com

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FIG. 9.

Trading window – Trades tab



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02:03 PM

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Currency	Maturity	Payer/Receiver	Trades Amount	Current Market Counterparty	Order Book Rate
Euro	1	Receiver	50m	CSFB (LDN)	5.272
Euro	1	Receiver	50m	BRED (PAS)	5.272
Euro	2	Receiver	25m	CSFB (LDN)	5.365
Euro	3	Receiver	25m	CSFB (LDN)	5.457
Euro	4	Receiver	25m	CSFB (LDN)	5.543
Euro	5	Receiver	50m	CSFB (LDN)	5.621
Euro	10	Receiver	50m	BALBA (LDN)	5.887
Euro	6	Receiver	25m	BRED (PAS)	5.694
Euro	7	Payer	10m	BALBA (LDN)	5.761
Euro	7	Payer	10m	GEN RE (NYK)	5.761
Euro	8	Payer	25m	BALBA (LDN)	5.887
Euro	8	Payer	25m	BALBA (LDN)	5.887

Trades are indicative until ISDA Affix publication

ISDA Fixing window – Fixing tab

FIG. 10

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Garban Intercapital etc

11:03am GMT, 11:03am Local Time

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Garban Intercapital

November 27, 2000

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Maturity	Fixing	Definition
1		Euro 5.221
2		5.232
3		5.313
4		5.383
5		5.456
6		5.53
7		5.599
8		5.655
9		5.7
10		5.743
15		0

London Fixing Time: 11:20:48